

Application No.: 10/524,895  
Amendment Dated: November 15, 2006  
Reply to Office Action of: August 23, 2006

MAT-8659US

**Remarks/Arguments:**

Claims 1-13 are pending and stand rejected. By this Amendment, claims 1, 8, 9, 12, and 13 are amended. Claims 4-5 and 10-11 are cancelled. New claims 14 and 15 are added. Support for the claim amendments and new claims can be found throughout the specification, and, more particularly, in original claims 4-5 and 10-11, as well as in the original specification at page 10, lines 1-25.

**Rejection of Claims 1-13 under 35 U.S.C. §103(a)**

In the Office Action, at item 2, claims 1-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Burns et al. (U.S. Patent No. 5,999,838) ("Burns") in view of Fang (U.S. Patent Appln. No. 2002/0057227) ("Fang").

Reconsideration is respectfully requested.

**Claim 1**

Claim 1 is directed to an antenna, and recites:

- a ground plate;
- a plurality of conductive elements placed so as not to face the ground plate and each having an electric length of about  $\lambda/2$ ; and
- a high frequency circuit, connected to at least two conductive elements of the plurality of conductive elements...

one end of each of the at least two conductive elements are connected at a connection point, and the high frequency circuit is connected to the connection point.

That is, each of the plurality of conductive elements has an electric length of about  $\lambda/2$  and one end of each of the at least two conductive elements are connected at a connection point. Further, the high frequency circuit is connected to the connection point.

### **Burns Reference**

Burns discloses a pair of orthogonal monopole antennas fabricated on a printed circuit board. Three metallization layers are illustrated in Fig. 4 of Burns. A first monopole antenna 50 is on the bottom surface of the device. A second monopole antenna 51 is on the top surface. The ground plane 53 is disposed between the feed elements 54 and 55 on the first and second monopole antennas 50 and 51. (See Burns at Col. 4, line 63 to Col. 5, line 5.) Moreover, the monopole antennas comprise microstrips formed on the dielectric layer, which extend about  $\lambda/4$  beyond the edge 58 of the ground plane 53. That is, in contrast to the electric length of each conductive element recited in claim 1, Burns discloses an electric length of about  $\lambda/4$ . (See Burns at Col. 5, lines 17-23.)

In addition, a 50 ohm feed 55 is coupled to the first monopole antenna 50. A second 50 ohm feed 54 is coupled to the second monopole antenna 51. (See Burns at Col 5, lines 8-11.) Burns further discloses that the monopole antennas 50 and 51 with their respective feed elements 55 and 54 provide for matched impedance elements for connection to standard transmission lines without matching circuits. (See Burns at Col. 5, lines 34-39.) That is, Burns provides for two connection points for two feed circuits. The structure of the Burns monopole antennas, however, is such that the monopole antennas 50 and 51 are **NOT** connected and, in particular, are not connected at a connection point. This is because, nothing in Burns discloses or suggest a connection between these two monopole antennas 50 and 51. Instead, Burns discloses that the monopole antennas 50 and 51 connect via separate 50 ohm feeds 55 and 54 to standard transmission **lines**.

Thus, the structure of the Burns antennas is completely different from the invention recited in claim 1. Furthermore, any high frequency circuit, which might, for example, feed the monopole antennas, would be connected to the at least two connection points.

### **Fang Reference**

Fang discloses a planar antenna apparatus. Fang is used by the Examiner to disclose a high frequency circuit. Fang does not overcome the deficiencies of Burns.

This is because, nothing in Fang suggests connection of a high frequency circuit to an antenna. Instead, Fig. 1 of Fang shows high frequency circuit 130 coupled to antenna 120 via coupling device 110. Moreover, Fang does not disclose or suggest at least two conductive elements being connected at a connection point, or that these conductive elements each have an electric length of  $\lambda/2$ . Instead, Fang discloses that a conventional monopole antenna is designed to have an operating length of a quarter of an operating wavelength (i.e.,  $\lambda/4$ ). (See Fang at paragraph [0028].)

Furthermore, since Burns teaches the use of microstrip feed elements 54 and 55 as a means to connect standard transmission lines without matching circuits, any modification to this structure based on any other reference for conversion of the monopoly antennas at a connection point would alter the intended purpose of the Burns device, and would be improper. Thus, Burns cannot be modified by the teachings of any other reference, including Fang, to produce the invention recited in claim 1.

Accordingly, it is submitted that the cited art of Burns and Fang, taken singularly or in any proper combination, does not disclose or suggest the above-mentioned features of claim 1.

Accordingly, claim 1 patentably distinguishes over Burns in view of Fang for at least the above-mentioned reasons.

**Claims 2-3, 6-9, and 12-13**

Claims 2, 3, 6-9, and 12-13, which include all of the limitations of claim 1, are submitted to also patentably distinguish over Burns in view of Fang for at least the same reasons as claim 1.

**New Claims 14 and 15**

New claims 14 and 15 are submitted to patentably distinguish over Burns in view of Fang for at least the same reasons as claim 1.

New claims 14 and 15 also include patentable distinctions beyond those of claim 1. For example, neither Burns nor Fang discloses or suggests that the at

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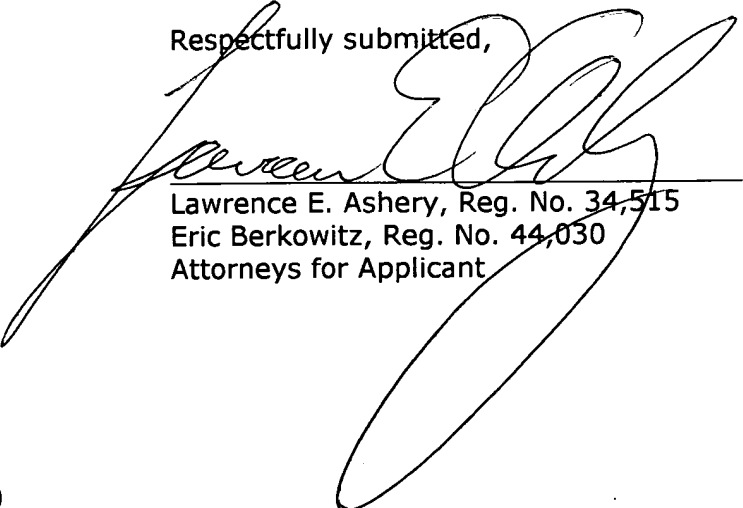
least two conductive elements are fed with the same phase or that circularly polarized waves are radiated in multiple directions.

Consideration and allowance of these claims is respectfully requested.

### Conclusion

In view of the amendments, new claims, and arguments set forth above, the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,



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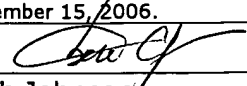
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